EXHIBIT B

<table>
<tr><th>USRE42219</th><th>Skyworks SKY78185-21 (“The accused product”)</th><th>Claim Construction</th></tr>
<tr>
<td>1. A multiple-input-multiple-output (MIMO) method for receiving data having symbols, with the data having symbols demultiplexed into a plurality of subchannels of data, with the plurality of subchannels of data spread-spectrum processed with a plurality of chip-sequence signals, respectively,</td>
<td>A system, at least in internal testing and usages, utilized by the accused product practices a multiple-input-multiple-output (MIMO) method (e.g., MIMO antenna system for receiving data) for receiving data having symbols (e.g., data symbols such as QAM data symbols), with the data having symbols (e.g., high speed data stream symbols) demultiplexed into a plurality of subchannels (e.g., demultiplexing of data into multiple data subchannels) of data, with the plurality of subchannels (e.g., multiple data streams) of data spread-spectrum processed with a plurality of chip-sequence signals (e.g., spreading code), respectively, with each chip-sequence signal (e.g., spreading code) different from other chip-sequence signals (e.g., spreading code) in the plurality of chip-sequence signals (e.g., spreading code), thereby generating a plurality of spread-spectrum-subchannel signals (e.g., multiple spread-spectrum signals corresponding to multiple subchannels), respectively, with the plurality of spread-spectrum-subchannel signals radiated, using radio waves (e.g., EM waves), from a plurality of antennas (e.g., MIMO antenna system for data transmission) as a plurality of spread-spectrum signals, respectively, with the plurality of spread-spectrum signals passing through a communications channel (e.g., radio waves) having multipath (e.g., a multipath fading environment) from the plurality of spread-spectrum signals, at least a first spread-spectrum signal (e.g., a spread-spectrum signal corresponding to a first spreading code) having a first channel (e.g., a first data stream) of data arriving from a first path of the multipath, and a second spread-spectrum signal (e.g., a spread-spectrum signal corresponding to a second spreading code) having a second channel (e.g., a second data stream) of data arriving from a second path of the multipath.</td>
<td>- Multiple input multiple output or (MIMO): multiple signals input by multiple antennas into the communications channel and multiple outputs from the communication channel that are received at multiple antennas.

The accused product utilizes multiple input and multiple output antennas (multiple antennas within HSPA+ base station and devices) for sending and receiving multiple signals (cellular data) into a communication channel (Cellular communication channel).

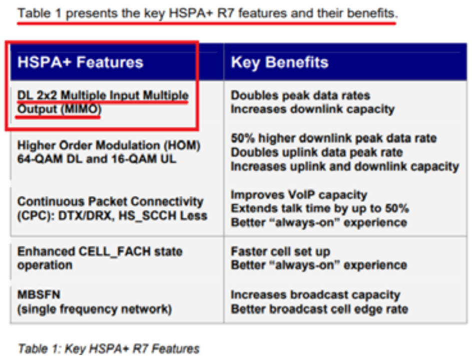
Table 1 presents the key HSPA+ R7 features and their benefits.
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<tr><th>HSPA+ Features</th><th>Key Benefits</th></tr>
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Increases downlink capacity</td></tr>
<tr><td>Higher Order Modulation (HOM)
64-QAM DL and 16-QAM UL</td><td>50% higher downlink peak data rate
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Increases uplink and downlink capacity</td></tr>
<tr><td>Continuous Packet Connectivity (CPC): DTX/DRX, HS_SCCH Less</td><td>Improves VoIP capacity
Extends talk time by up to 50%
Better “always-on” experience</td></tr>
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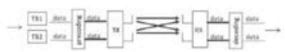
USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
with each chip-sequence signal different from other chip-sequence signals in the plurality of chip-sequence signals, thereby generating a plurality of spread-spectrum-subchannel signals, respectively, with the plurality of spread-spectrum-subchannel signals radiated, using radio waves, from a plurality of	SKYWORKS **PRODUCT SUMMARY** **SKY78185-21: SkyOne® LiTE Low Band Front-End Module with 2G/3G/4G Power Amplifiers for LTE Applications** **Applications** • Multiband 2G / 3G / 4G Mobile Devices • Handsets, Data Cards, M2M • LTE Advanced Carrier Aggregation (CA) **Features** • MIPI® RFFE 2.0 control interfaces w/ 1.8 V nominal supply • Integrated switched duplexer filters for Bands 8, 12, 20 and 26 • Four auxiliary 3G/4G Tx outputs for external filters • Four auxiliary 3G/4G TRx ports to support additional bands • Tx filtering for harmonically-related LB-MB downlink CA • Integrated low band and high band 2G PAs • High band 2G works with companion MB/HB modules • Integrated bi-directional RF coupler with cascade support • 50 ohm I/O impedance on all RF pads • ESD compliant 8 kV on antenna port • Small, low profile package: - 7.6 mm x 6.0 mm x 0.75 mm - 56-pad configuration • **3G Features:** - WCDMA, HSPA+ - CDMA2000 1x RC1, RC3, EVDO (Rev A) • **4G Features:** - FDD/TDD LTE - Uplink QPSK, 16QAM, 64QAM - Inter-band Downlink/Uplink CA support **Description** The SKY78185-21 Multimode Multiband Tx-Rx Front-End Module (FEM) supports 2G / 3G / 4G mobile devices and operates efficiently in 3G/4G modes. The FEM consists of a low-band 3G/4G PA block, low- and high-band 2G PA blocks, a silicon controller containing the MIPI RFFE interface, RF band switches, antenna switches, a bi-directional coupler, and integrated filters for Bands 8, 12, 20 and 26. RF I/O ports are internally matched to 50 ohms to minimize the need for external components. Extremely low leakage current maximizes device standby time. The IC die and passive components are mounted on a multi-layer laminate substrate. The assembly encapsulated in a 7.6 mm x 6.0 mm x 0.75 mm, 56-pad LGA, SMT plastic package allows a highly manufacturable, low cost solution. The SKY78185-21 FEM is optimized for LTE Advanced which utilizes Carrier Aggregation for higher data rates. The combined filtering, RF matching, and TRx switching internal to the FEM optimizes performance for popular Downlink (DL) CA band combinations, all in a compact and low cost solution. The FEM contains all necessary components between the antenna and RFIC transceiver and is optimized to provide superior Rx sensitivity and Tx efficiency. Selecting the linear-GMSK operation standard disables VRAMP input, so all PA biasing depends only on MIPI mode selection. The transmitted envelope is then a linear function of RF input. Selecting VRAMP-enabled operation, the PA controller provides VRAMP control of the GMSK envelope and reduces sensitivity to input drive, temperature, power supply, and process variations. Skyworks' Finger-Based Integrated Power Amplifier Control (FB-iPAC) minimizes output power variation into mismatch. In EDGE linear mode, VRAMP voltage and MIPI-based bias settings jointly optimize PA linearity and efficiency. Exceptional RF coexistence planning and system techniques are employed to minimize Rx de-sensitizing ("de-sense"). https://www.skyworksinc.com/-/media/SkyWorks/Documents/Products/2801-2900/SKY78185_21_204925B_PS.pdf	**HSPA+** To further increase bitrates in the evolution of HSPA, referred to as HSPA+, new functions are added; for example higher order modulation 64QAM (DL) and 16QAM (UL) as well as Multiple Input Multiple Output (MIMO), used only in the DL. Maximum channel rate DL, using 64QAM and 15 codes, is 21 Mbps and UL using 16QAM is 11 Mbps. MIMO, e.g. Spatial Multiplexing, is used to increase the overall bitrate through transmission of two (or more) different data streams on two (or more) different antennas - using the same channelization codes at the same time, separated through use of different data precoding and different pilot channels transmitted from each Tx-antenna - to be received by two or more Rx-antennas, see figure 8. In 3GPP Release 7 for HSPA there will be 2 Tx and Rx antennas (2x2 MIMO).  Figure 8. Simplified illustration of 2x2 MIMO (Spatial Multiplexing). Two TBs are precoded onto two data streams, then transmitted on two TX antennas and received by two RX antennas. ***- the data having symbols demultiplexed into a plurality of subchannels of data:*** *“demultiplexing” is “process of taking an incoming data stream and dividing it into output streams that are distinct from each other and distinct from the incoming data stream”.* The accused product has HSPA+ capabilities. The accused product converts incoming data stream into data-symbols and divide it into multiple streams distinct from each other and incoming data stream.

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<td>antennas as a plurality of spread-spectrum signals, respectively, with the plurality of spread-spectrum signals passing through a communications channel having multipath, thereby generating, from the plurality of spread-spectrum signals, at least a first spread-spectrum signal having a first channel of data arriving</td>
<td>

The accused product has HSPA+ capabilities. The HSPA evolution or HSPA+ technology has downlink MIMO as one of the basic feature of the technology.

- **3G Features:**
  - WCDMA, HSPA+
  - CDMA2000 1x RC1, RC3, EVDO (Rev A)

https://www.skyworksinc.com/-/media/SkyWorks/Documents/Products/2801-2900/SKY78185_21_204925B_PS.pdf

Release 7 HSPA+ For Mobile Broadband Evolution

2.1 What is HSPA+?

HSPA+ is the name of the set of HSPA enhancements that are defined in 3GPP Release 7 (R7) and beyond. The enhanced downlink (HSDPA) was defined in 3GPP R5 and provides three times the data capacity of WCDMA R99 (using a rake receiver and a single UE receive antenna).

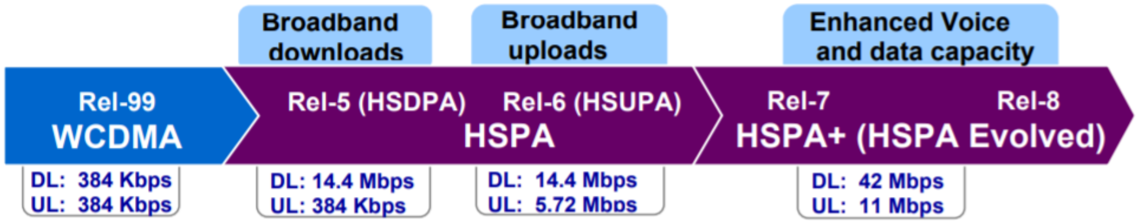

Figure 1: UMTS Evolution

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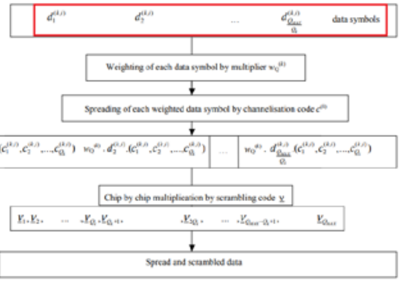


Figure 2: Spreading of data symbols

5.2.1.2 16QAM modulation

The data modulation is performed to the bits from the output of the physical channel mapping procedure. In case of 16QAM, modulation 4 consecutive binary bits are represented by one complex valued data symbol. Each user burst has two data carrying parts, termed data blocks:

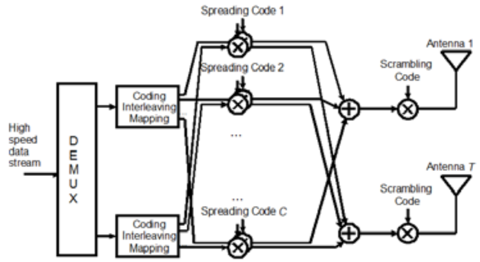
$$\underline{\mathbf{d}}^{(k,i)} = (\underline{d}_1^{(k,i)}, \underline{d}_2^{(k,i)}, \ldots, \underline{d}_{N_k}^{(k,i)})^T \quad i = 1, 2; k = 1, \ldots, K. \qquad (2b)$$

N_k is the number of symbols per data field for the user k. This number is linked to the spreading factor Q_k.

Data block $\underline{\mathbf{d}}^{(k,1)}$ is transmitted before the midamble and data block $\underline{\mathbf{d}}^{(k,2)}$ after the midamble. Each of the N_k data symbols $\underline{d}_n^{(k,i)}$; i=1, 2; k=1,...,K; n=1,...,N_k; of equation 2b has the symbol duration $T_s^{(k)} = Q_k T_c$ as already given.

The data modulation is 16QAM, thus the data symbols $\underline{d}_n^{(k,i)}$ are generated from 4 consecutive data bits from the output of the physical channel mapping procedure in [8]:

$$b_{l,n}^{(k,i)} \in \{0,1\}, \quad l = 1,2,3,4; \; k = 1,\ldots,K_{code}; \; n = 1,\ldots N_k; \; i = 1,2 \qquad (2c)$$



- the plurality of subchannels of data spread-spectrum processed with a plurality of chip-sequence signals, respectively, with each chip-sequence signal different from other chip-sequence signals in the

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<td>from a first path of the multipath, and a second spread-spectrum signal having a second channel of data arriving from a second path of the multipath, comprising the steps of:</td>
<td>
https://connectedworld.com/wp-content/uploads/2014/07/Qualcomm_whotepaper_HSPA+.pdf

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Table 1: Key HSPA+ R7 Features

https://connectedworld.com/wp-content/uploads/2014/07/Qualcomm_whotepaper_HSPA+.pdf
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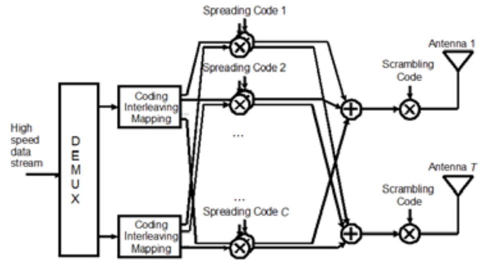
<td>
plurality of chip-sequence signals, thereby generating a plurality of spread-spectrum-subchannel signals: *processing the plurality of subchannels of data with one or more codes that distributes each signal across the available bandwidth, thereby generating a plurality of spread-spectrum subchannel signals which correspond to each of the subchannels of data.*

The accused product processes demultiplexed multiple data streams with multiple spreading codes, respectively; and thereby distributes each signal across the available bandwidth. The accused product generates multiple spread-spectrum subchannel signals correspond to multiple data streams.



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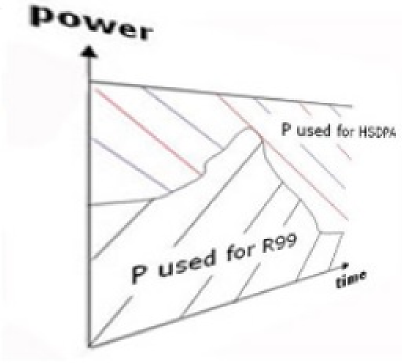
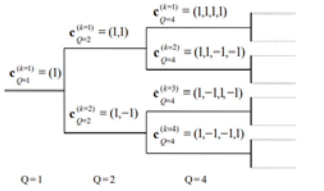
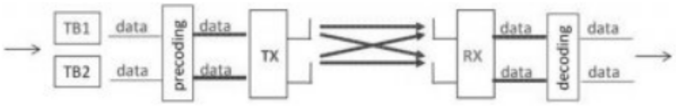
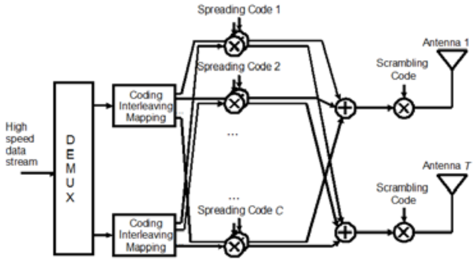
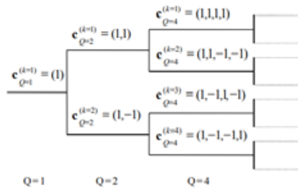
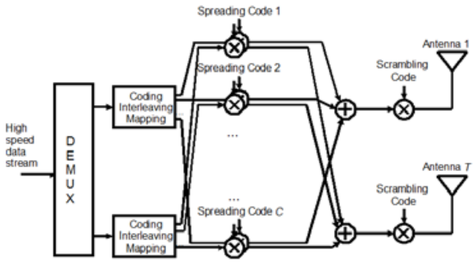
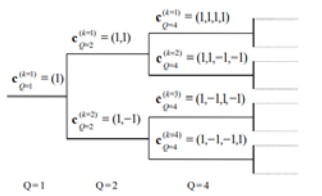
USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	By Jeanette Wannstrom High Speed Packet data Access (HSPA) has been an upgrade to WCDMA networks (both FDD, and TDD) used to increase packet data performance. The introduction was done in steps; High Speed Down Link (DL) Packet data Access (HSDPA), was introduced in 3GPP Release 5, and Enhanced Up Link (UL), also referred to as High Speed UL Packet data Access (HSUPA), came in Release 6. The combination of HSDPA and Enhanced UL is referred to as HSPA. HSPA evolution (also known as HSPA+ and evolved HSPA) came in Release 7 with further improvements in later releases.  https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	 **Figure 1: Code-tree for generation of Orthogonal Variable Spreading Factor (OVSF) codes for Channelisation Operation** Each level in the code tree defines a spreading factor indicated by the value of Q in the figure. All codes within the code tree cannot be used simultaneously in a given timeslot. A code can be used in a timeslot if and only if no other code on the path from the specific code to the root of the tree or in the sub-tree below the specific code is used in this timeslot. This means that the number of available codes in a slot is not fixed but depends on the rate and spreading factor of each physical channel. - ***spread-spectrum subchannel signals:*** *signals, corresponding to each of the subchannels of data, which have been processed with one or more codes that distributes each signal across the available bandwidth.* The accused product processes demultiplexed multiple data streams with multiple spreading codes, respectively; and thereby distributes each signal across the available bandwidth. The accused product generates multiple spread-spectrum subchannel signals correspond to multiple data streams.

USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	HSPA+ To further increase bitrates in the evolution of HSPA, referred to as HSPA+, new functions are added; for example higher order modulation 64QAM (DL) and 16QAM (UL) as well as Multiple Input Multiple Output (MIMO), used only in the DL. Maximum channel rate DL, using 64QAM and 15 codes, is 21 Mbps and UL using 16QAM is 11 Mbps. MIMO, e.g. Spatial Multiplexing, is used to increase the overall bitrate through transmission of two (or more) different data streams on two (or more) different antennas - using the same channelization codes at the same time, separated through use of different data precoding and different pilot channels transmitted from each Tx-antenna - to be received by two or more Rx-antennas, see figure 8. In 3GPP Release 7 for HSPA there will be 2 Tx and Rx-antennas (2x2 MIMO).  Figure 8. Simplified illustration of 2x2 MIMO (Spatial Multiplexing). Two TBs are precoded onto two data streams, then transmitted on two TX antennas and received by two RX antennas. https://www.3gpp.org/technologies/keywords-acronyms/99-hspa 3GPP Release 7 • Downlink multiple-input multiple output (MIMO) • Higher-order modulation for uplink (16QAM) and downlink (64QAM) • Continuous packet connectivity (CPC)	  **Figure 1: Code-tree for generation of Orthogonal Variable Spreading Factor (OVSF) codes for Channelisation Operation** Each level in the code tree defines a spreading factor indicated by the value of Q in the figure. All codes within the code tree cannot be used simultaneously in a given timeslot. A code can be used in a timeslot if and only if no other code on the path from the specific code to the root of the tree or in the sub-tree below the specific code is used in this timeslot. This means that the number of available codes in a slot is not fixed but depends on the rate and spreading factor of each physical channel. - ***plurality of spread-spectrum signals:*** *signals corresponding to data which has been processed with one or more codes that distribute and increase the bandwidth of the data across the available bandwidth.* The accused product receives signals irradiated through multiple antennas corresponding to data which has been processed with one or more codes (spreading codes) that distribute and increase the

USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	https://www.electronicdesign.com/technologies/communications/article/21799728/understanding-hspa-cellular-technology **7.7 Radio Related Enhancements** NOTE: TDOC References need to be added for these items. HSPA Evolution consists of six radio related enhancements, which include: 1) Multiple Input / Multiple Output (MIMO). Continuous Connectivity for Packet Data Users (CPC). Downlink Higher Order Modulation using 64QAM for HSDPA. Uplink Higher Order Modulation using 16QAM for HSUPA. Improved Layer-2 Support for High Data rates. Enhanced Cell FACH. **7.7.1 Multiple Input / Multiple Output (MIMO)** The purpose of MIMO is to improve system capacity and spectral efficiency by increasing the data throughput in the downlink within the existing 5MHz carrier. This will be achieved by means of deploying multiple antennas at both UE and Node-B side. The technical objective is the integration of MIMO functionality in UTRA, to improve capacity and spectral efficiency. The work tasks include the support for both FDD and TDD. In those cases where differences between FDD and TDD are identified, they should be considered as separate work tasks. https://www.etsi.org/deliver/etsi_tr/125900_125999/125999/07.01.00_60/tr_125999v070100p.pdf As shown below HSPA utilizes QAM/QPSK modulations. 16QAM modulated signals carry 4 bits per symbols (4 bits are mapped on one symbol).	bandwidth of the data across the available bandwidth.   **Figure 1: Code-tree for generation of Orthogonal Variable Spreading Factor (OVSF) codes for Channelisation Operation** Each level in the code tree defines a spreading factor indicated by the value of Q in the figure. All codes within the code tree cannot be used simultaneously in a given timeslot. A code can be used in a timeslot if and only if no other code on the path from the specific code to the root of the tree or in the sub-tree below the specific code is used in this timeslot. This means that the number of available codes in a slot is not fixed but depends on the rate and spreading factor of each physical channel.

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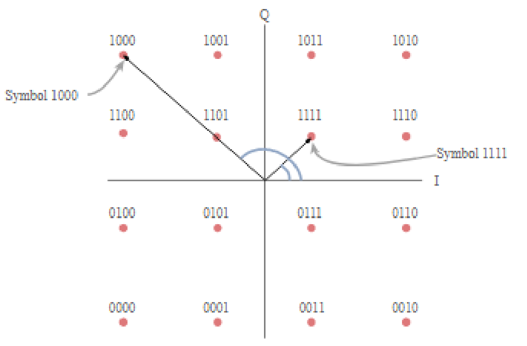
QAM bits per symbol

The advantage of using QAM is that it is a higher order form of modulation and as a result it is able to carry more bits of information per symbol. By selecting a higher order format of QAM, the data rate of a link can be increased.

The table below gives a summary of the bit rates of different forms of QAM and PSK.



Bit mapping for a 16QAM signal

https://www.electronics-notes.com/articles/radio/modulation/quadrature-amplitude-modulation-types-8qam-16qam-32qam-64qam-128qam-256qam.php

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</table>

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	QAM FORMATS & BIT RATES COMPARISON **MODULATION** / **BITS PER SYMBOL** / **SYMBOL RATE** BPSK / 1 / 1 x bit rate QPSK / 2 / 1/2 bit rate 8PSK / 3 / 1/3 bit rate 16QAM / 4 / 1/4 bit rate 32QAM / 5 / 1/5 bit rate 64QAM / 6 / 1/6 bit rate https://www.electronics-notes.com/articles/radio/modulation/quadrature-amplitude-modulation-types-8qam-16qam-32qam-64qam-128qam-256qam.php For FDD – **4.1 Overview** Spreading is applied to the physical channels. It consists of two operations. The first is the channelisation operation, which transforms every data symbol into a number of chips, thus increasing the bandwidth of the signal. The number of chips per data symbol is called the Spreading Factor (SF). The second operation is the scrambling operation, where a scrambling code is applied to the spread signal. With the channelisation, data symbols on so-called I- and Q-branches are independently multiplied with an OVSF code. With the scrambling operation, the resultant signals on the I- and Q-branches are further multiplied by complex-valued scrambling code, where I and Q denote real and imaginary parts, respectively. https://www.etsi.org/deliver/etsi_ts/125200_125299/125213/07.00.00_60/ts_125213v070000p.pdf	

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	5.1.1.2 16QAM In case of 16QAM, a set of four consecutive binary symbols n_k, n_{k+1}, n_{k+2}, n_{k+3} (with k mod 4 = 0) is serial-to-parallel converted to two consecutive binary symbols ($i_1 = n_k$, $i_2 = n_{k+2}$) on the I branch and two consecutive binary symbols ($q_1 = n_{k+1}$, $q_2 = n_{k+3}$) on the Q branch and then mapped to 16QAM by the modulation mapper as defined in table 3B. The I and Q branches are then both spread to the chip rate by the same real-valued channelisation code $C_{ch,16,m}$. The channelisation code sequence shall be aligned in time with the symbol boundary. The sequences of real-valued chips on the I and Q branch are then treated as a single complex-valued sequence of chips. This sequence of chips from all multi-codes is summed and then scrambled (complex chip-wise multiplication) by a complex-valued scrambling code $S_{dl,n}$. The scrambling code is applied aligned with the scrambling code applied to the P-CCPCH. https://www.etsi.org/deliver/etsi_ts/125200_125299/125213/07.00.00_60/ts_125213v070000p.pdf For TDD – The data modulation is performed to the bits from the output of the physical channel mapping procedure in [8] and combines always 2 consecutive binary bits to a complex valued data symbol. Each user burst has two data carrying parts, termed data blocks: $$\underline{\mathbf{d}}^{(k,i)} = \left(\underline{d}_1^{(k,i)}, \underline{d}_2^{(k,i)}, \ldots, \underline{d}_{N_k}^{(k,i)}\right)^T, \quad i = 1,2; k = 1,\ldots,K_{Code} \qquad (1)$$ K_{Code} is the number of used codes in a time slot: for 3.84Mcps, max K_{Code} =16; for 7.68Mcps, max K_{Code} =32. N_k is the number of symbols per data field for the code k. This number is linked to the spreading factor Q_k [7]. Data block $\underline{\mathbf{d}}^{(k,1)}$ is transmitted before the midamble and data block $\underline{\mathbf{d}}^{(k,2)}$ after the midamble. Each of the N_k data symbols $\underline{d}_n^{(k,i)}$; i=1, 2; k=1,...,K_{Code}; n=1,...,N_k; of equation 1 has the symbol duration $T_s^{(k)} = Q_k . T_c$ as already given. The data modulation is QPSK, thus the data symbols $\underline{d}_n^{(k,i)}$ are generated from two consecutive data bits from the output of the physical channel mapping procedure in [8]: $$b_{l,n}^{(k,i)} \in \{0,1\}, \quad l = 1,2; k = 1,\ldots,K_{Code}; n = 1,\ldots,N_k; i = 1,2 \qquad (2)$$ using the following mapping to complex symbols: https://www.etsi.org/deliver/etsi_ts/125200_125299/125223/07.00.00_60/ts_125223v070000p.pdf	

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5.2.1.2 16QAM modulation

The data modulation is performed to the bits from the output of the physical channel mapping procedure. In case of 16QAM, modulation 4 consecutive binary bits are represented by one complex valued data symbol. Each user burst has two data carrying parts, termed data blocks:

$$\underline{\mathbf{d}}^{(k,i)} = (\underline{d}_1^{(k,i)}, \underline{d}_2^{(k,i)}, ..., \underline{d}_{N_k}^{(k,i)})^{\mathrm{T}} \quad \mathrm{i} = 1, 2; \mathrm{k} = 1, ..., \mathrm{K}. \qquad (2b)$$
N_k is the number of symbols per data field for the user k. This number is linked to the spreading factor Q_k.

Data block $\underline{\mathbf{d}}^{(k,1)}$ is transmitted before the midamble and data block $\underline{\mathbf{d}}^{(k,2)}$ after the midamble. Each of the N_k data symbols $\underline{d}_n^{(k,i)}$; i=1, 2; k=1,...,K; n=1,...,N_k; of equation 2b has the symbol duration $T_s^{(k)} = Q_k . T_c$ as already given.

The data modulation is 16QAM, thus the data symbols $\underline{d}_n^{(k,i)}$ are generated from 4 consecutive data bits from the output of the physical channel mapping procedure in [8]:

$$b_{l,n}^{(k,i)} \in \{0,1\}, \quad l = 1,2,3,4; \; k = 1,...,K_{code}; \; n = 1,...N_k; \; i = 1,2 \qquad (2c)$$
https://www.etsi.org/deliver/etsi_ts/125200_125299/125223/07.00.00_60/ts_125223v070000p.pdf
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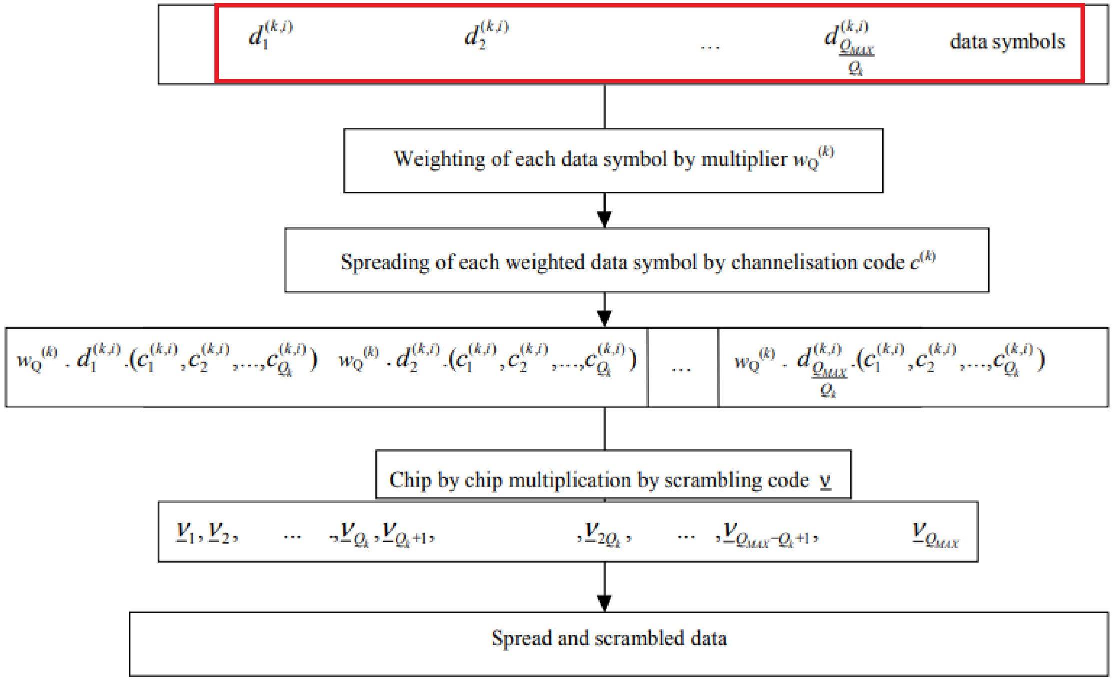
<tr><th>USRE42219</th><th>Skyworks SKY78185-21 (“The accused product”)</th><th>Claim Construction</th></tr>
<tr><td></td><td>

Figure 2: Spreading of data symbols

https://www.etsi.org/deliver/etsi_ts/125200_125299/125223/07.00.00_60/ts_125223v070000p.pdf

As shown below, a basic HSPA+ transmitter demultiplexes the data symbols and converts it into different data streams. The transmitter generates spread-spectrum signal for each of the demultiplexed signal by utilizing spreading codes for each of the data streams. The spread-spectrum signal fed to multiple antennas. HSPA+ technology introduces MIMO antenna system in telecommunication. Both, the transmitter and the receiver comprise multiple antennas for data communication.</td><td></td></tr>
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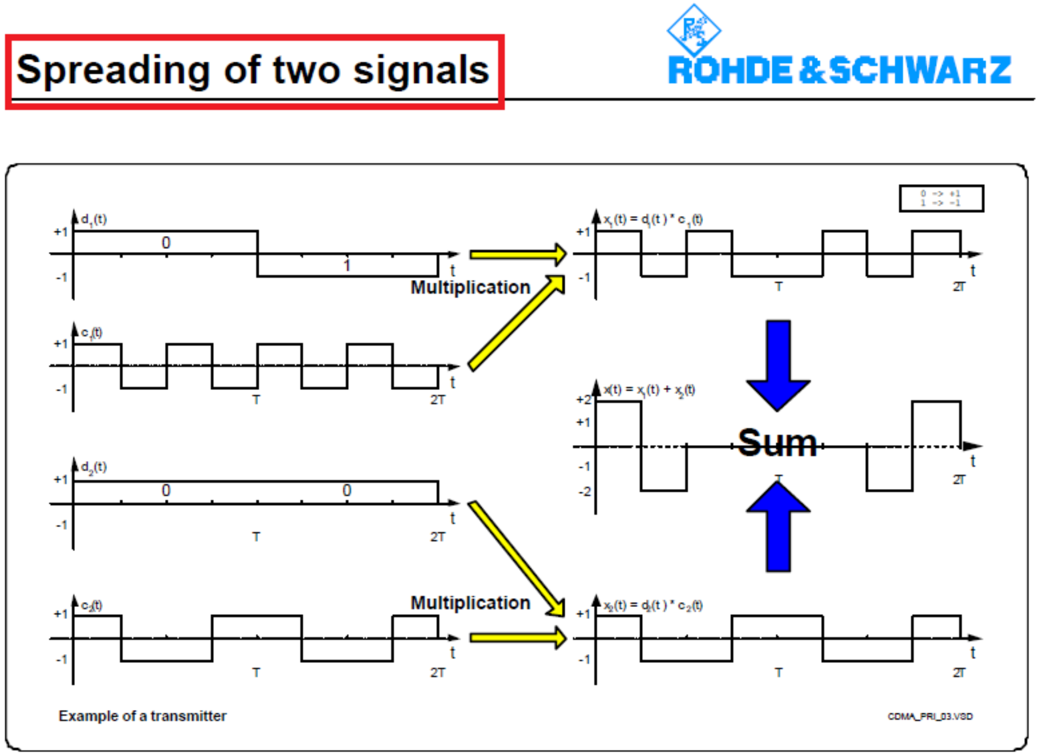
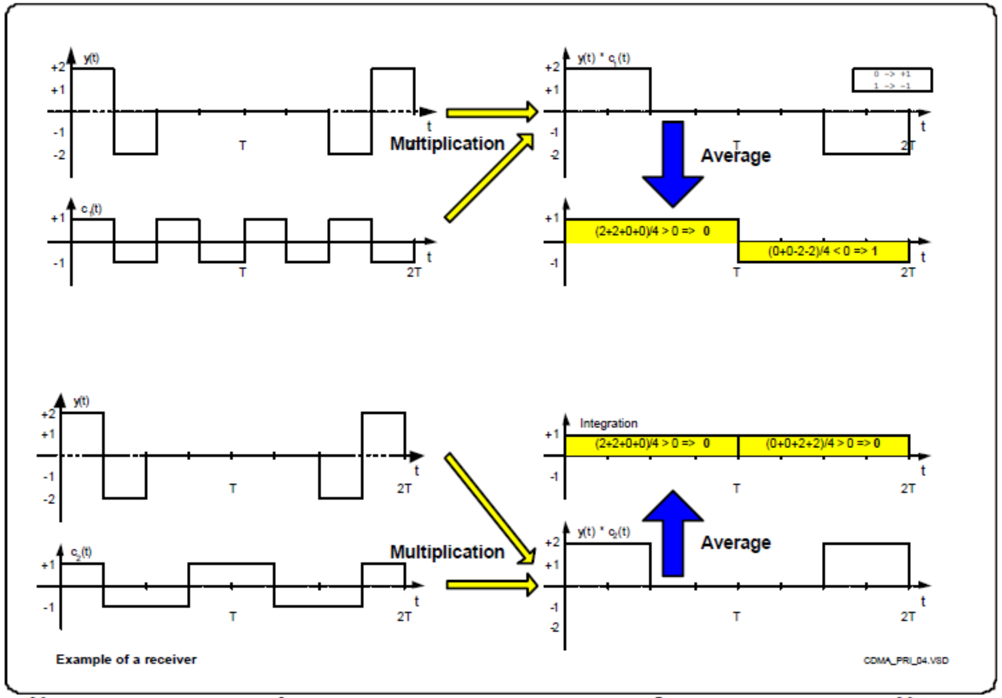
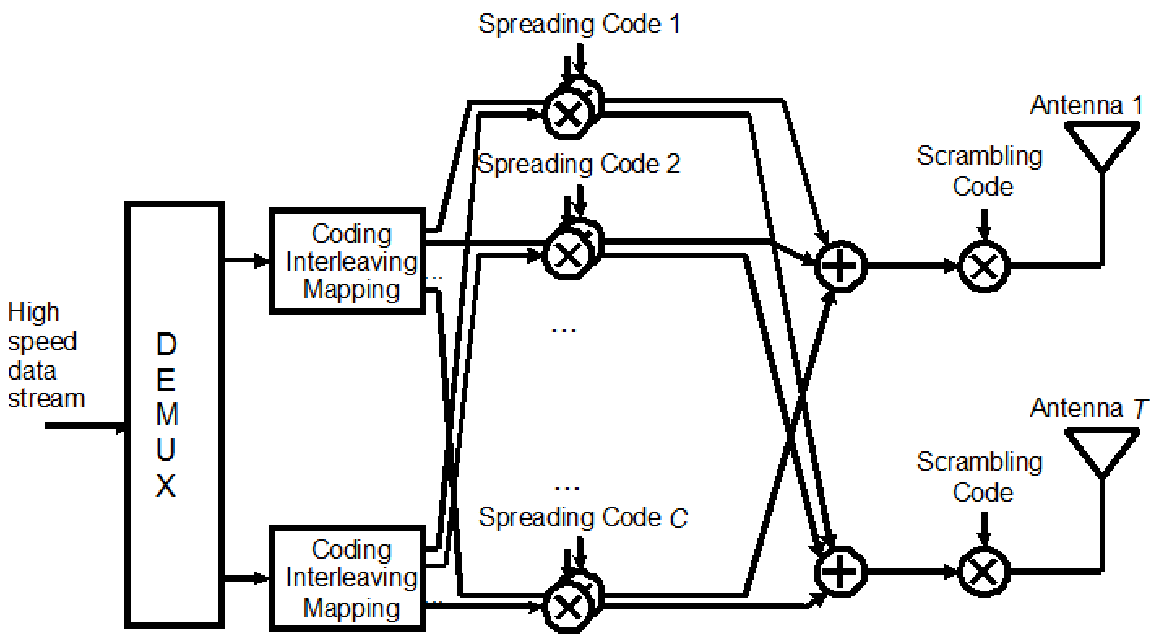
USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	 The multiplication of binary data d - similar to exclusive OR resp. modulo2 operation to logical representation of data - with a higher rate binary code word c results in a binary sequence x that requires obviously more bandwidth than the original data d. This operation is known as signal spreading, due to the signal spreading over the bandwidth. https://fdocuments.net/document/introduction-to-3gpp-wcdma-by-rohde-schwarz.html	

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	Despreading of two signals ROHDE&SCHWARZ  The receiver gets the total signal, however, is looking for one of the two data streams only. The multiplication of the received total signal $r = x_1+x_2$ with the code word c_1 again, results obviously in the original data d_1. The same applies to d_2 when multiplying r with the code word c_2. This simple operation is known as de-spreading. https://fdocuments.net/document/introduction-to-3gpp-wcdma-by-rohde-schwarz.html For FDD –	

USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	5.2.1.1 Basic physical layer structure of HS-DSCH for MIMO The block diagram below shows the basic physical layer structure of the HS-DSCH for PARC. A block of data corresponding to a single high speed data stream is demultiplexed into a maximum of *T* low-rate streams, where *T* is the number of transmit antennas. Each of these low-rate streams is turbo encoded, interleaved, and mapped to either QPSK or 16QAM symbols. Because different coding rates and symbol mappings can be used on each low-rate stream, the number of information bits assigned to each stream can be different. The symbols for a given low-rate stream are associated with a particular transmit antenna. They are further demultiplexed into a maximum of *C* substreams, where *C* is the maximum number of HS-PDSCH defined by the UE capability. These substreams are spread using distinct OVSF channelization codes, summed, and then modulated by a scrambling code. The resulting CDMA modulated low-rate stream is transmitted from it associated antenna. http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip 	

USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip Spreading is applied to the physical channels. It consists of two operations. The first is the channelisation operation, which transforms every data symbol into a number of chips, thus increasing the bandwidth of the signal. The number of chips per data symbol is called the Spreading Factor (SF). The second operation is the scrambling operation, where a scrambling code is applied to the spread signal. With the channelisation, data symbols on so-called I- and Q-branches are independently multiplied with an OVSF code. With the scrambling operation, the resultant signals on the I- and Q-branches are further multiplied by complex-valued scrambling code, where I and Q denote real and imaginary parts, respectively. https://www.etsi.org/deliver/etsi_ts/125200_125299/125213/07.00.00_60/ts_125213v070000p.pdf The spreading operation is specified in subclauses 4.2.1.1 to 4.2.1.3 for each of the dedicated physical channels; it includes a spreading stage, a weighting stage, and an IQ mapping stage. In the process, the streams of real-valued chips on the I and Q branches are summed; this results in a complex-valued stream of chips for each set of channels. As described in figure 1, the resulting complex-valued streams S_{dpch}, $S_{hs\text{-}dpcch}$ and $S_{e\text{-}dpch}$ are summed into a single complex-valued stream which is then scrambled by the complex-valued scrambling code $S_{dpch,n}$. The scrambling code shall be applied aligned with the radio frames, i.e. the first scrambling chip corresponds to the beginning of a radio frame. https://www.etsi.org/deliver/etsi_ts/125200_125299/125213/07.00.00_60/ts_125213v070000p.pdf	

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<tr><th>USRE42219</th><th>Skyworks SKY78185-21 (“The accused product”)</th><th>Claim Construction</th></tr>
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The channelisation codes of figure 1 are Orthogonal Variable Spreading Factor (OVSF) codes that preserve the orthogonality between a user"s different physical channels. The OVSF codes can be defined using the code tree of figure 4.

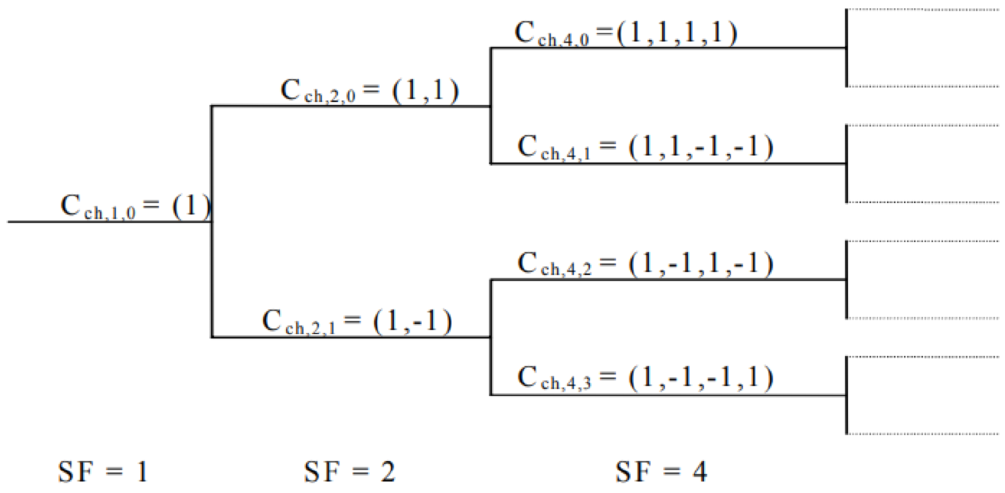

Figure 4: Code-tree for generation of Orthogonal Variable Spreading Factor (OVSF) codes

In figure 4, the channelisation codes are uniquely described as $C_{ch,SF,k}$, where SF is the spreading factor of the code and k is the code number, $0 \leq k \leq SF-1$.

https://www.etsi.org/deliver/etsi_ts/125200_125299/125213/07.00.00_60/ts_125213v070000p.pdf

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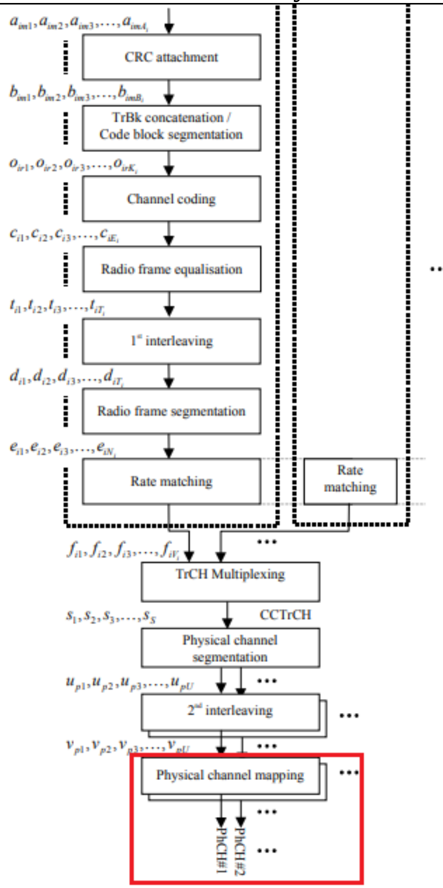
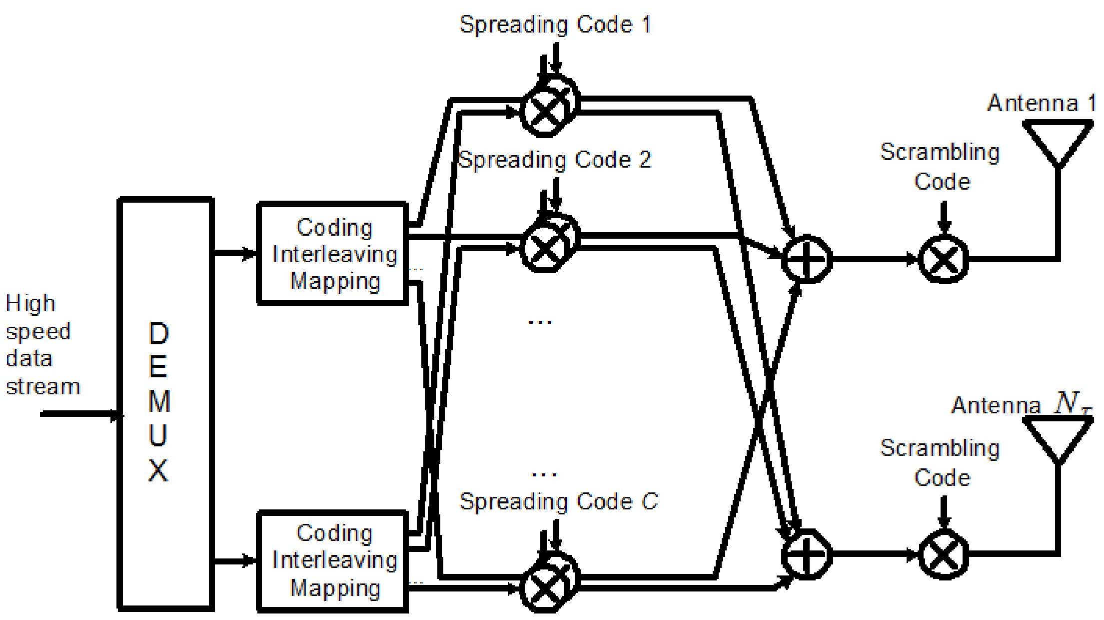
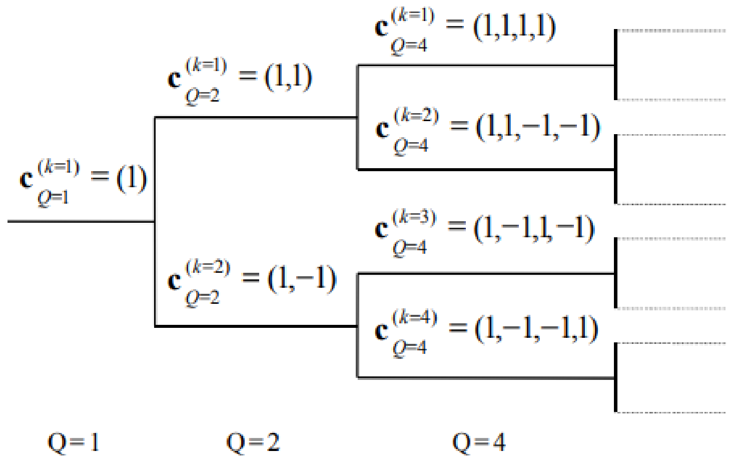
USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	 **Figure 1: Transport channel multiplexing structure for uplink** https://www.etsi.org/deliver/etsi_ts/125200_125299/125212/07.00.00_60/ts_125212v070000p.pdf For TDD –	

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	5.4.1.1 Basic physical layer structure of HS-DSCH for MIMO The block diagram below shows the basic physical layer structure of the HS-DSCH for PARC. A block of data corresponding to a single high speed data stream is de-multiplexed into a maximum of N_T low-rate streams, where N_T is the number of transmit antennas. Each of these low-rate streams is turbo encoded, interleaved, and mapped to either QPSK or 16QAM symbols. Because different coding rates and symbol mappings can be used on each low-rate stream, the number of information bits assigned to each stream can be different. The symbols for a given low-rate stream are associated with a particular transmit antenna. They are further de-multiplexed into a maximum of C sub-streams, where C is the maximum number of HS-PDSCH defined by the UE capability. These sub-streams are spread using distinct OVSF channelisation codes, summed, and then modulated by a scrambling code. The resulting CDMA modulated low-rate stream is transmitted from it associated antenna. http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip  http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	 **Figure 1: Code-tree for generation of Orthogonal Variable Spreading Factor (OVSF) codes for Channelisation Operation** Each level in the code tree defines a spreading factor indicated by the value of Q in the figure. All codes within the code tree cannot be used simultaneously in a given timeslot. A code can be used in a timeslot if and only if no other code on the path from the specific code to the root of the tree or in the sub-tree below the specific code is used in this timeslot. This means that the number of available codes in a slot is not fixed but depends on the rate and spreading factor of each physical channel. https://www.etsi.org/deliver/etsi_ts/125200_125299/125223/07.00.00_60/ts_125223v070000p.pdf	

USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	Data stream from/to MAC and higher layers (Transport block / Transport block set) is encoded/decoded to offer transport services over the radio transmission link. Channel coding scheme is a combination of error detection, error correcting (including rate matching), and interleaving and transport channels mapping onto/splitting from physical channels. In the UTRA-TDD mode, the total number of basic physical channels (a certain time slot one spreading code on a certain carrier frequency) per frame is given by the maximum number of time slots and the maximum number of CDMA codes per time slot. https://www.etsi.org/deliver/etsi_ts/125200_125299/125222/07.00.00_60/ts_125222v070000p.pdf **4.2.10 Physical channel segmentation** When more than one PhCH is used, physical channel segmentation divides the bits among the different PhCHs. The bits input to the physical channel segmentation are denoted by $s_1, s_2, s_3, \ldots, s_S$, where S is the number of bits input to the physical channel segmentation block. The number of PhCHs after rate matching is denoted by *P*, as defined in subclause 4.2.7.1. The bits after physical channel segmentation are denoted $u_{p,1}, u_{p,2}, u_{p,3}, \ldots, u_{p,U_p}$, where *p* is PhCH number and U_p is the in general variable number of bits in the respective radio frame for each PhCH. The relation between s_k and $u_{p,k}$ is given below. https://www.etsi.org/deliver/etsi_ts/125200_125299/125222/07.00.00_60/ts_125222v070000p.pdf For each physical channel an individual minimum spreading factor Sp_{min} is transmitted by means of the higher layers. Denote the number of data bits in each physical channel by $U_{p,Sp}$, where *p* indicates the sequence number $1 \le p \le P_{max}$ and *Sp* indicates the spreading factor of this physical channel: *Sp* takes the possible values {*16, 8, 4, 2, 1*} for 1.28Mcps TDD and 3.84Mcps TDD, *Sp* takes the possible values {32, *16, 8, 4, 2, 1*} for 7.68Mcps TDD. The index *p* is described in section 4.2.12 with the following modifications: spreading factor (*Q*) is replaced by the minimum spreading factor Sp_{min} and *k* is replaced by the channelization code index at $Q = Sp_{min}$. Then, for N_{data} one of the following values in ascending order can be chosen: $\{U_{1,S1_{min}}, U_{1,S1_{min}} + U_{2,S2_{min}}, U_{1,S1_{min}} + U_{2,S2_{min}} + \ldots + U_{P_{max},(SP_{max})_{min}}\}$	

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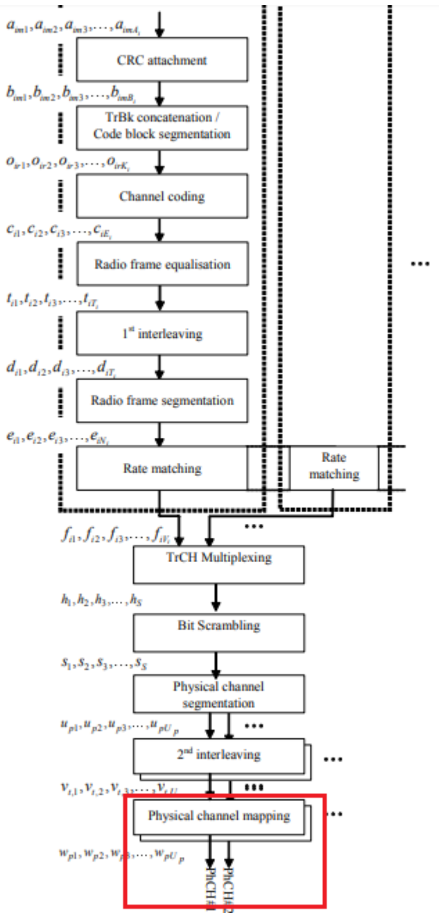
	https://www.etsi.org/deliver/etsi_ts/125200_125299/125222/07.00.00_60/ts_125222v070000p.pdf  https://www.etsi.org/deliver/etsi_ts/125200_125299/125222/07.00.00_60/ts_125222v070000p.pdf	

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	As shown below, the accused product is utilized in a multipath environment. **9.2.4 MIMO Performance** The MIMO performance of the High Speed Physical Downlink Shared Channel (HS-DSCH) in multi-path fading environments are determined by the information bit throughput R. **9.2.4.1 Requirement Fixed Reference Channel (FRC) H-Set 9** The requirements are specified in terms of a minimum information bit throughput R for the DL reference channels H-Set 9 specified in Annex A.7.1.9, with the addition of the parameters in Table 9.22E1 and the downlink physical channel setup according to table C.9. The primary precoding vector signalled on the HS-SCCH and applied on the associated HS-DSCH subframe shall correspond to the preferred primary precoding vector reported immediately before the start of the HS-SCCH subframe. https://www.etsi.org/deliver/etsi_ts/125100_125199/125101/07.18.00_60/ts_125101v071800p.pdf **9.3 Reporting of Channel Quality Indicator** The propagation conditions for this subclause are defined in table B.1C for non-MIMO operation under fading conditions, in subclause B.2.6.1 for MIMO operation under single stream conditions, and in subclause B.2.6.2 for MIMO operation under dual stream conditions. https://www.etsi.org/deliver/etsi_ts/125100_125199/125101/07.18.00_60/ts_125101v071800p.pdf	

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B.2.6.1 MIMO Single Stream Fading Conditions

For MIMO single stream conditions, the resulting propagation channel shall be generated using two independent fading processes with classical Doppler and one randomly picked but fixed precoding vector **w** out of the set defined in equation EQ.B.2.6.1. The two fading processes shall be generated according to the parameters in Table B.4

Table B.4

MIMO Single Stream Conditions, Speed for Band I, II, III, IV, IX and X: 3km/h Speed for Band V, VI and VIII 7.1km/h Speed for Band VII: 2.3km/h		
Relative Delay [ns]	Relative Mean Power [dB]	(Amplitude, phase) symbols
0	0	(a_1, φ_1)
0	0	(a_2, φ_2)

https://www.etsi.org/deliver/etsi_ts/125100_125199/125101/07.18.00_60/ts_125101v071800p.pdf

B.2.6.2 MIMO Dual Stream Fading Conditions

For MIMO dual stream conditions, the resulting propagation channel shall be generated using two independent fading processes with classical Doppler and one randomly picked but fixed precoding matrix **W** out of the set defined in equation EQ.B.2.6.2. The two fading processes shall be generated according to the parameters in Table B.5

Table B.5

MIMO Dual Stream Conditions, Speed for Band I, II, III, IV, IX and X: 3km/h Speed for Band V, VI and VIII 7.1km/h Speed for Band VII: 2.3km/h		
Relative Delay [ns]	Relative Mean Power [dB]	(Amplitude, phase) symbols
0	0	(a_1, φ_1)
0	-3	(a_2, φ_2)

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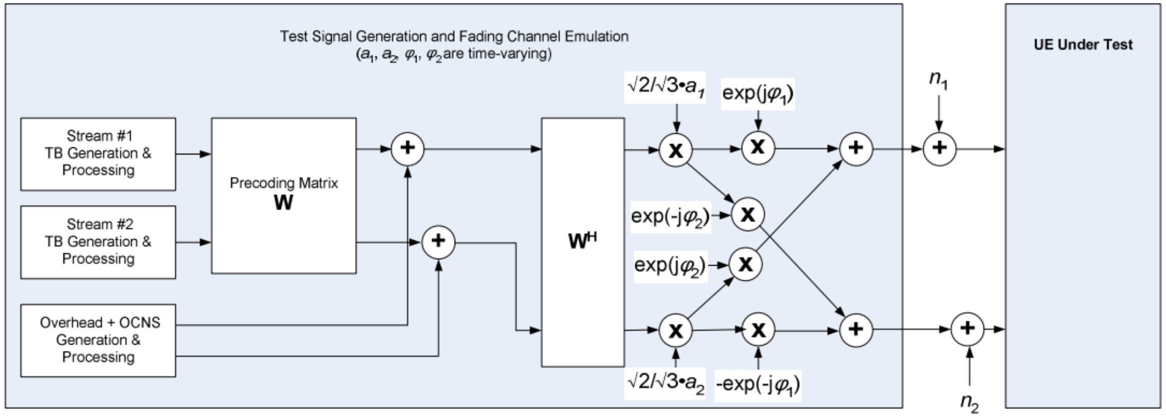
USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	https://www.etsi.org/deliver/etsi_ts/125100_125199/125101/07.18.00_60/ts_125101v071800p.pdf  https://www.etsi.org/deliver/etsi_ts/125100_125199/125101/07.18.00_60/ts_125101v071800p.pdf	

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	Multipath fading affects most forms of radio communications links in one form or another. Multipath fading can affect signals on frequencies from the LF portion of the spectrum and below right up into the microwave portion of the spectrum. Multipath fading occurs in any environment where there is multipath propagation and the paths change for some reason. This will change not only their relative strengths but also their phases, as the path lengths will change. Multipath fading may also cause distortion to the radio signal. As the various paths that can be taken by the signals vary in length, the signal transmitted at a particular instance will arrive at the receiver over a spread of times. This can cause problems with phase distortion and inter-symbol interference when data transmissions are made. As a result, it may be necessary to incorporate features within the radio communications system that enables the effects of these problems to be minimised. https://www.electronics-notes.com/articles/antennas-propagation/propagation-overview/multipath-fading.php	

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Multipath fading basics

Multipath fading is a feature that needs to be taken into account when designing or developing a radio communications system. In any terrestrial radio communications system, the signal will reach the receiver not only via the direct path, but also as a result of reflections from objects such as buildings, hills, ground, water, etc that are adjacent to the main path.

The overall signal at the radio receiver is a summation of the variety of signals being received. As they all have different path lengths, the signals will add and subtract from the total dependent upon their relative phases.

At times there will be changes in the relative path lengths. This could result from either the radio transmitter or receiver moving, or any of the objects that provides a reflective surface moving. This will result in the phases of the signals arriving at the receiver changing, and in turn this will result in the signal strength varying as a result of the different way in which the signals will sum together. It is this that causes the fading that is present on many signals.

https://www.electronics-notes.com/articles/antennas-propagation/propagation-overview/multipath-fading.php

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<tr><td>receiving the first spread-spectrum signal and the second spread-spectrum signal with a plurality of</td><td>The accused product practices receiving the first spread-spectrum signal (e.g., the spread-spectrum signal corresponding to the first spreading code) and the second spread-spectrum signal (e.g., the spread-spectrum signal corresponding to the second spreading code) with a plurality of receiver antennas (e.g., multiple antenna system of the accused product).</td><td></td></tr>
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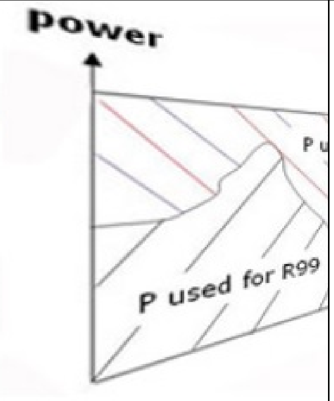
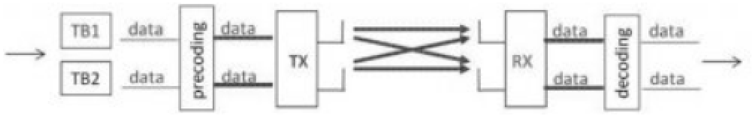
USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
receiver antennas;	By Jeanette Wannstrom High Speed Packet data Access (HSPA) has been an upgrade to WCDMA networks (both FDD, and TDD) used to increase packet data performance. The introduction was done in steps; High Speed Down Link (DL) Packet data Access (HSDPA), was introduced in 3GPP Release 5, and Enhanced Up Link (UL), also referred to as High Speed UL Packet data Access (HSUPA), came in Release 6. The combination of HSDPA and Enhanced UL is referred to as HSPA. HSPA evolution (also known as HSPA+ and evolved HSPA) came in Release 7 with further improvements in later releases.  https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	

USRE42219	Skyworks SKY78185-21 (“The accused product”)	Claim Construction
	HSPA+ To further increase bitrates in the evolution of HSPA, referred to as HSPA+, new functions are added; for exa higher order modulation 64QAM (DL) and 16QAM (UL) as well as Multiple Input Multiple Output (MIMO), use the DL. Maximum channel rate DL, using 64QAM and 15 codes, is 21 Mbps and UL using 16QAM is 11 Mbps. MIMO, e.g. Spatial Multiplexing, is used to increase the overall bitrate through transmission of two (or more) data streams on two (or more) different antennas - using the same channelization codes at the same time, se through use of different data precoding and different pilot channels transmitted from each Tx-antenna - to be by two or more Rx-antennas, see figure 8. In 3GPP Release 7 for HSPA there will be 2 Tx and Rx-antennas (MIMO).  Figure 8. Simplified illustration of 2x2 MIMO (Spatial Multiplexing). Two TBs are precoded onto two data streams, th transmitted on two TX antennas and received by two RX antennas. https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	

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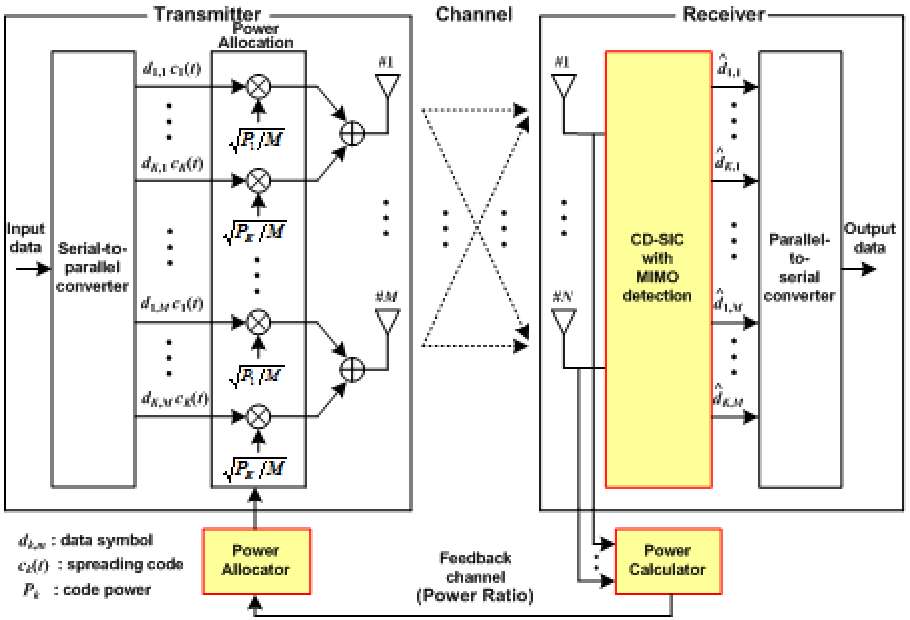
<tr><th>USRE42219</th><th>Skyworks SKY78185-21 (“The accused product”)</th><th>Claim Construction</th></tr>
<tr><td></td><td>3GPP Release 7

• Downlink multiple-input multiple output (MIMO)
• Higher-order modulation for uplink (16QAM) and downlink (64
• Continuous packet connectivity (CPC)

https://www.electronicdesign.com/technologies/communications/article/21799728/understanding-hspa-cellular-technology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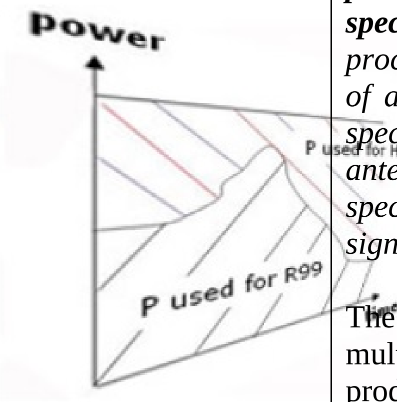
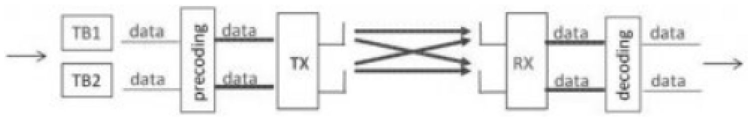
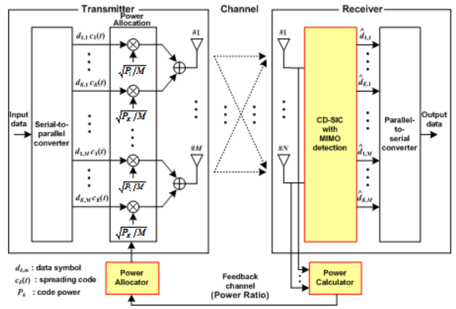
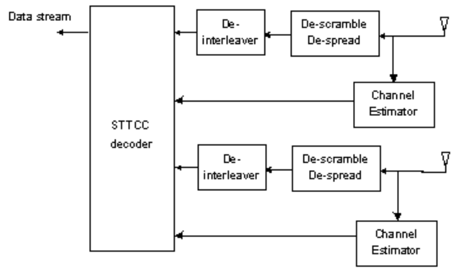
	http://www.3gpp.org/ftp/tsg_ran/TSGR_35/Docs/RP-070141.zip	
detecting, at each receiver antenna of the plurality of receiver antennas, the first spread-spectrum signal as a first plurality of detected spread-spectrum signals, respectively;	The accused product practices detecting, at each receiver antenna of the plurality of receiver antennas, the first spread-spectrum signal (e.g., spread-spectrum signal corresponding to a first spreading code) as a first plurality of detected spread-spectrum signals, respectively. By Jeanette Wannstrom High Speed Packet data Access (HSPA) has been an upgrade to WCDMA networks (both FDD, and TDD) used to increase packet data performance. The introduction was done in steps; High Speed Down Link (DL) Packet data Access (HSDPA), was introduced in 3GPP Release 5, and Enhanced Up Link (UL), also referred to as High Speed UL Packet data Access (HSUPA), came in Release 6. The combination of HSDPA and Enhanced UL is referred to as HSPA. HSPA evolution (also known as HSPA+ and evolved HSPA) came in Release 7 with further improvements in later releases.  https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	- ***detecting, at each receiver antenna of the plurality of receiver antennas, the second spread-spectrum signal as a second plurality of detected spread-spectrum signals, respectively***: *process of determining the presence of and recovering the first spread-spectrum signal received at each antenna port, with the first spread-spectrum signal being multipath signal.* The accused receives signals at its multiple antennas. The accused product determines the presence of and recovers the first spread-spectrum signal (a first spread-spectrum signal corresponding to a first spreading code) received at each antenna port, with the first spread-spectrum signal (the first spread-spectrum signal corresponding to the first spreading code) being multipath signal.

USRE42219	Skyworks SKY78185-21 ("The accused product")	Claim Construction
	HSPA+ To further increase bitrates in the evolution of HSPA, referred to as HSPA+, new functions are added; for exa higher order modulation 64QAM (DL) and 16QAM (UL) as well as Multiple Input Multiple Output (MIMO), use the DL. Maximum channel rate DL, using 64QAM and 15 codes, is 21 Mbps and UL using 16QAM is 11 Mbps. MIMO, e.g. Spatial Multiplexing, is used to increase the overall bitrate through transmission of two (or more) data streams on two (or more) different antennas - using the same channelization codes at the same time, se through use of different data precoding and different pilot channels transmitted from each Tx-antenna - to be by two or more Rx-antennas, see figure 8. In 3GPP Release 7 for HSPA there will be 2 Tx and Rx-antennas MIMO).  Figure 8. Simplified illustration of 2x2 MIMO (Spatial Multiplexing). Two TBs are precoded onto two data streams, th transmitted on two TX antennas and received by two RX antennas. https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	 

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	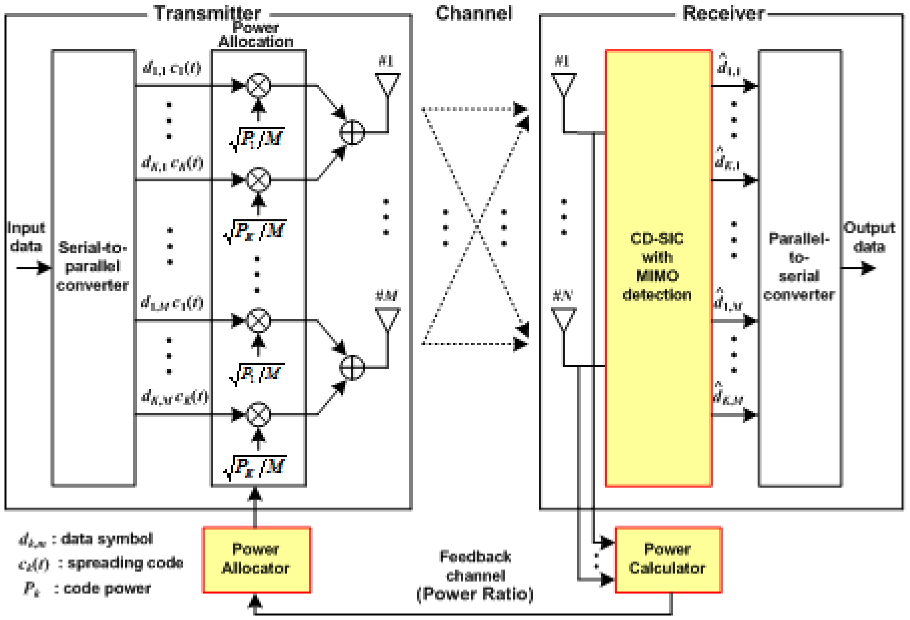 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

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	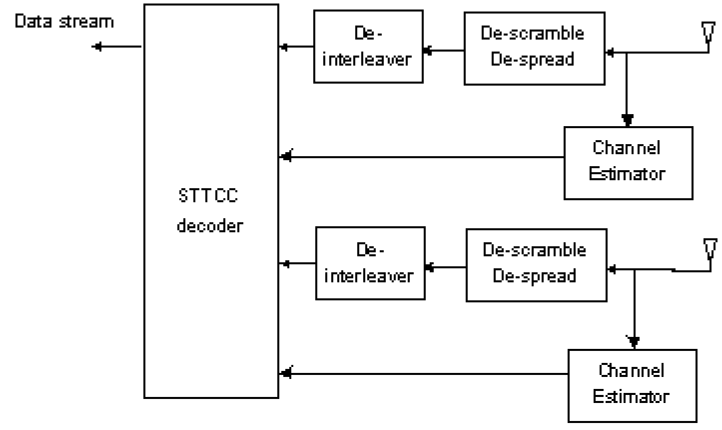 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	
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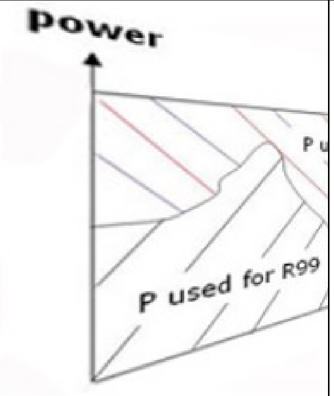
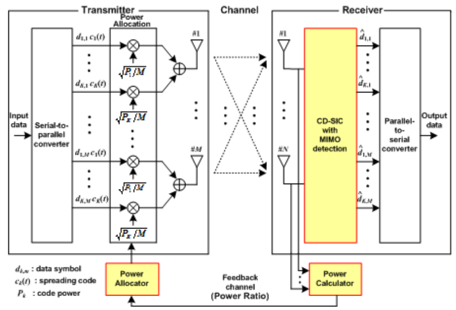
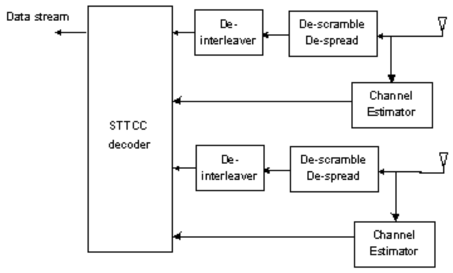
signals, respectively;	By Jeanette Wannstrom High Speed Packet data Access (HSPA) has been an upgrade to WCDMA networks (both FDD, and TDD) used to increase packet data performance. The introduction was done in steps; High Speed Down Link (DL) Packet data Access (HSDPA), was introduced in 3GPP Release 5, and Enhanced Up Link (UL), also referred to as High Speed UL Packet data Access (HSUPA), came in Release 6. The combination of HSDPA and Enhanced UL is referred to as HSPA. HSPA evolution (also known as HSPA+ and evolved HSPA) came in Release 7 with further improvements in later releases.  https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	and recovers the second spread-spectrum signal (a second spread-spectrum signal corresponding to a second spreading code) received at each antenna port, with the second spread-spectrum signal (the second spread-spectrum signal corresponding to the second spreading code) being multipath signal.  

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HSPA+

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higher order modulation 64QAM (DL) and 16QAM (UL) as well as Multiple Input Multiple Output (MIMO), use
the DL.

Maximum channel rate DL, using 64QAM and 15 codes, is 21 Mbps and UL using 16QAM is 11 Mbps.

MIMO, e.g. Spatial Multiplexing, is used to increase the overall bitrate through transmission of two (or more) (
data streams on two (or more) different antennas - using the same channelization codes at the same time, se
through use of different data precoding and different pilot channels transmitted from each Tx-antenna - to be
by two or more Rx-antennas, see figure 8. In 3GPP Release 7 for HSPA there will be 2 Tx and Rx-antennas (
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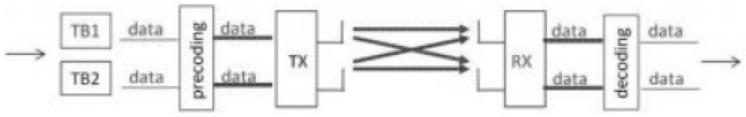

Figure 8. Simplified illustration of 2x2 MIMO (Spatial Multiplexing). Two TBs are precoded onto two data streams, th
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https://www.3gpp.org/technologies/keywords-acronyms/99-hspa

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	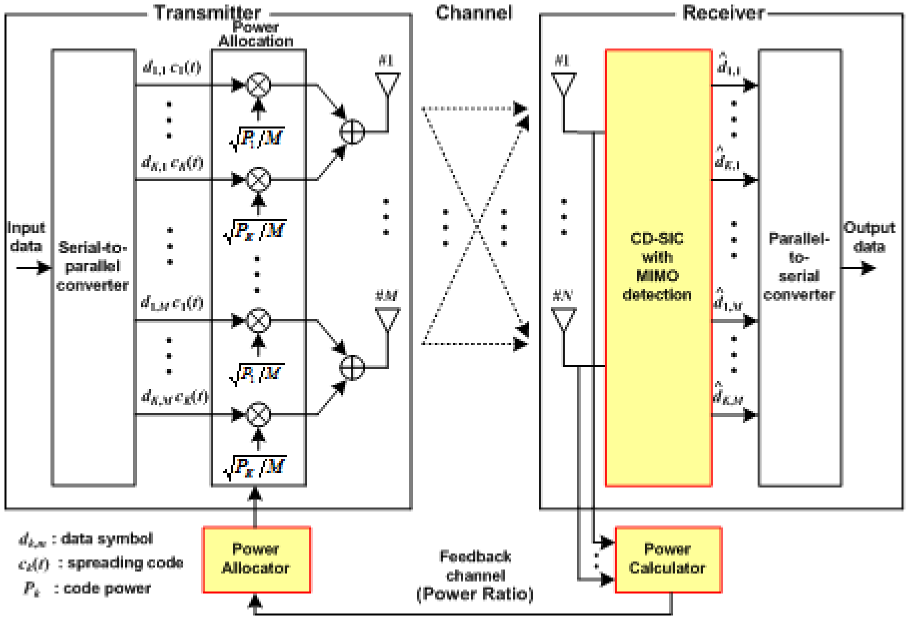 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

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	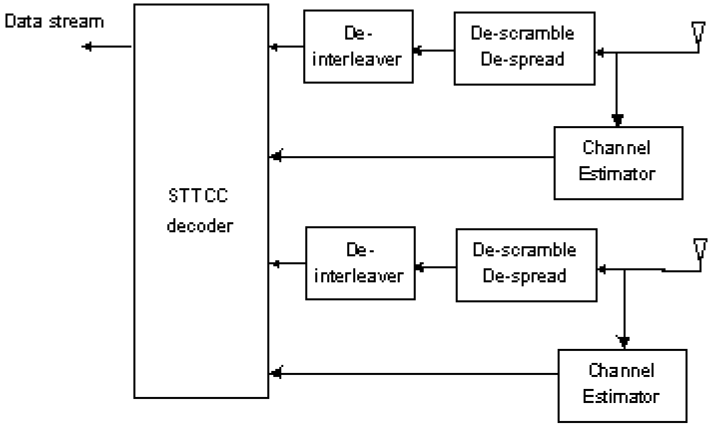 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	
combining, from each receiver antenna of the plurality of receiver antennas, each of the first plurality of detected spread-spectrum signals, thereby generating a first	The accused product practices combining, from each receiver antenna of the plurality of receiver antennas, each of the first plurality of detected spread-spectrum signals (e.g., the spread-spectrum signal corresponding to the first spreading code), thereby generating a first combined signal.	- ***combining:*** *forming a single aggregated version of the received signal from the multiple versions of the transmitted time and space diverse signals received at the multiple receiver antennas.* The accused product forms a single aggregated version of the received signal from the multiple versions of the transmitted time and space diverse signals received at the multiple receiver antennas.

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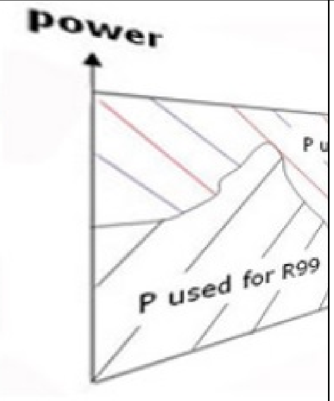
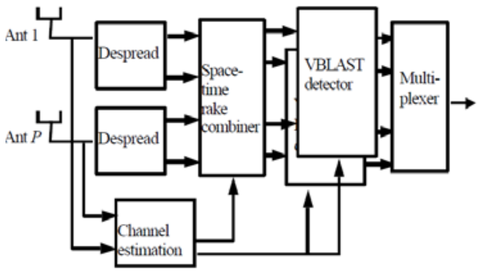
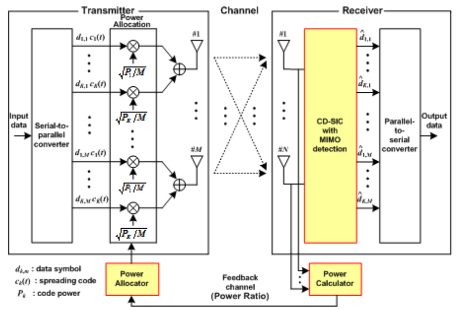
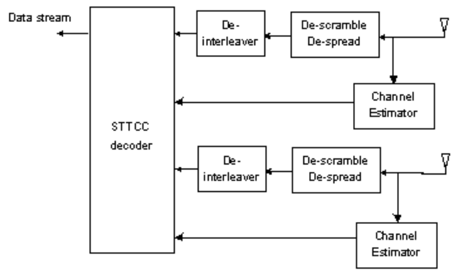
combined signal; and	By Jeanette Wannstrom High Speed Packet data Access (HSPA) has been an upgrade to WCDMA networks (both FDD, and TDD) used to increase packet data performance. The introduction was done in steps; High Speed Down Link (DL) Packet data Access (HSDPA), was introduced in 3GPP Release 5, and Enhanced Up Link (UL), also referred to as High Speed UL Packet data Access (HSUPA), came in Release 6. The combination of HSDPA and Enhanced UL is referred to as HSPA. HSPA evolution (also known as HSPA+ and evolved HSPA) came in Release 7 with further improvements in later releases.  https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	 Figure 7. Block diagram of a MIMO receiver  

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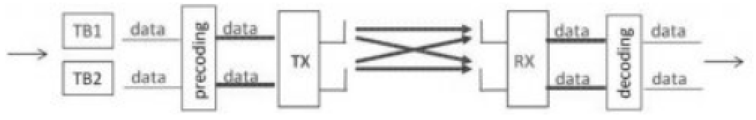
	HSPA+ To further increase bitrates in the evolution of HSPA, referred to as HSPA+, new functions are added; for exa higher order modulation 64QAM (DL) and 16QAM (UL) as well as Multiple Input Multiple Output (MIMO), use the DL. Maximum channel rate DL, using 64QAM and 15 codes, is 21 Mbps and UL using 16QAM is 11 Mbps. MIMO, e.g. Spatial Multiplexing, is used to increase the overall bitrate through transmission of two (or more) data streams on two (or more) different antennas - using the same channelization codes at the same time, se through use of different data precoding and different pilot channels transmitted from each Tx-antenna - to be by two or more Rx-antennas, see figure 8. In 3GPP Release 7 for HSPA there will be 2 Tx and Rx-antennas MIMO).  Figure 8. Simplified illustration of 2x2 MIMO (Spatial Multiplexing). Two TBs are precoded onto two data streams, th transmitted on two TX antennas and received by two RX antennas. https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	

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	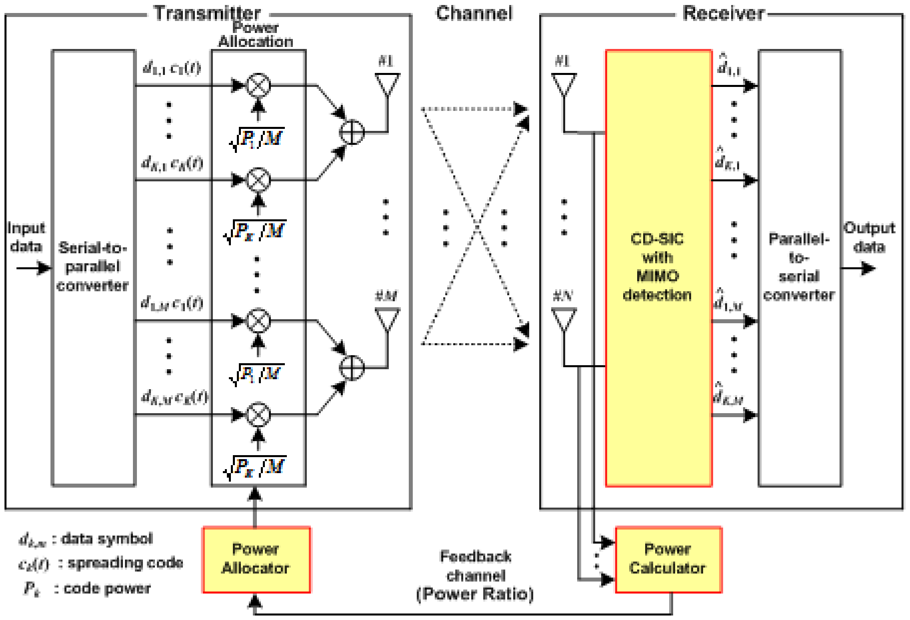 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

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	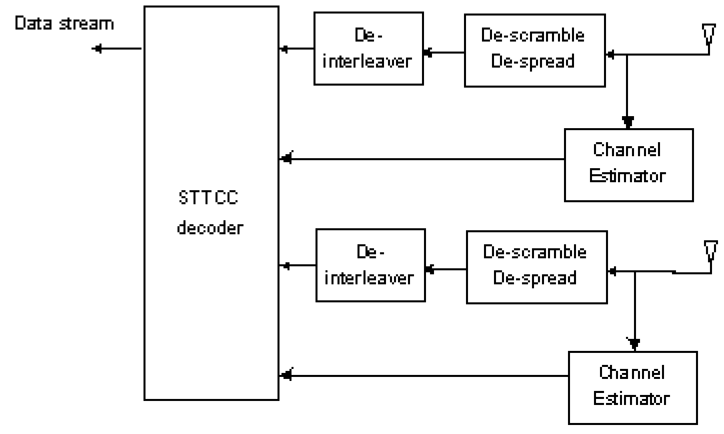 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

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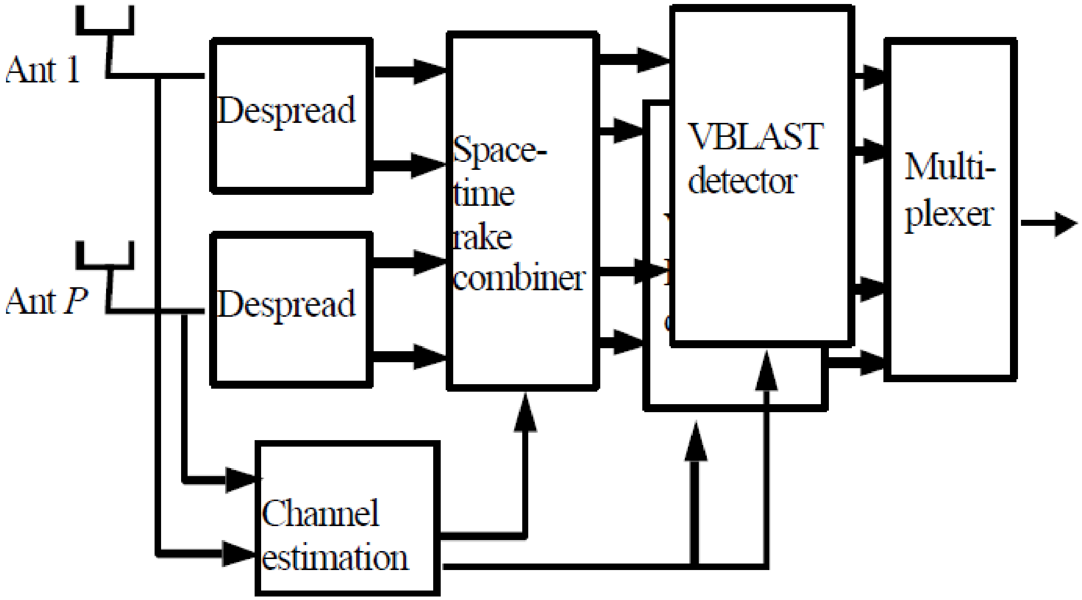
<tr><td></td><td>

Figure 7. Block diagram of a MIMO receiver

http://www.3gpp.org/ftp/Specs/archive/25_series/25.848/25848-400.zip</td><td></td></tr>
<tr><td>combining, from each receiver antenna of the plurality</td><td>The accused product practices combining, from each receiver antenna of the plurality of receiver antennas, each of the second plurality of detected spread-spectrum signals (e.g., the spread-spectrum signal corresponding to the second spreading code), thereby generating a second combined signal.</td><td>- combining: forming a single aggregated version of the received signal from the multiple versions of the transmitted time and space</td></tr>
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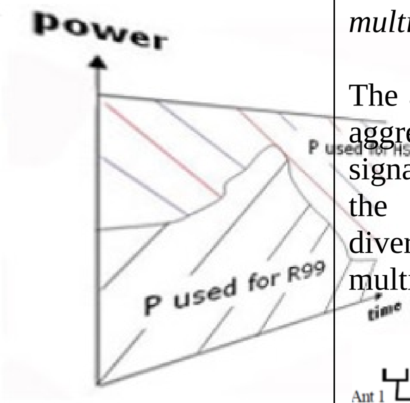
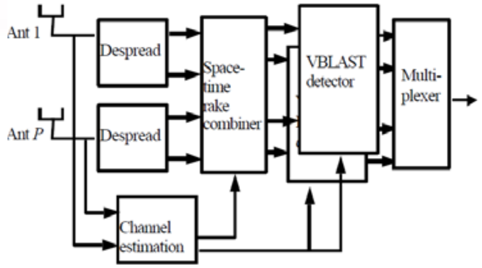
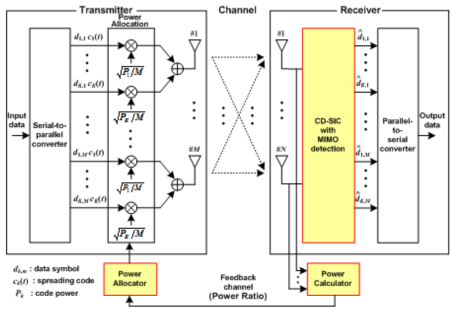
of receiver antennas, each of the second plurality of detected spread-spectrum signals, thereby generating a second combined signal.	By Jeanette Wannstrom High Speed Packet data Access (HSPA) has been an upgrade to WCDMA networks (both FDD, and TDD) used to increase packet data performance. The introduction was done in steps; High Speed Down Link (DL) Packet data Access (HSDPA), was introduced in 3GPP Release 5, and Enhanced Up Link (UL), also referred to as High Speed UL Packet data Access (HSUPA), came in Release 6. The combination of HSDPA and Enhanced UL is referred to as HSPA. HSPA evolution (also known as HSPA+ and evolved HSPA) came in Release 7 with further improvements in later releases.  https://www.3gpp.org/technologies/keywords-acronyms/99-hspa	*diverse signals received at the multiple receiver antennas.* The accused product forms a single aggregated version of the received signal from the multiple versions of the transmitted time and space diverse signals received at the multiple receiver antennas.  Figure 7. Block diagram of a MIMO receiver 

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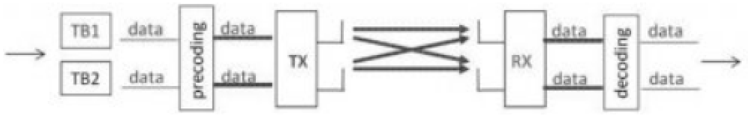

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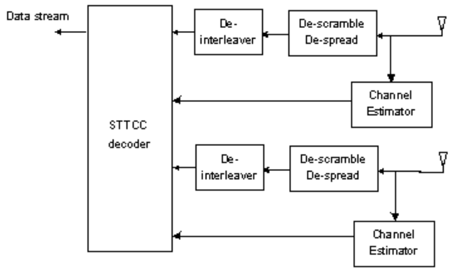

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	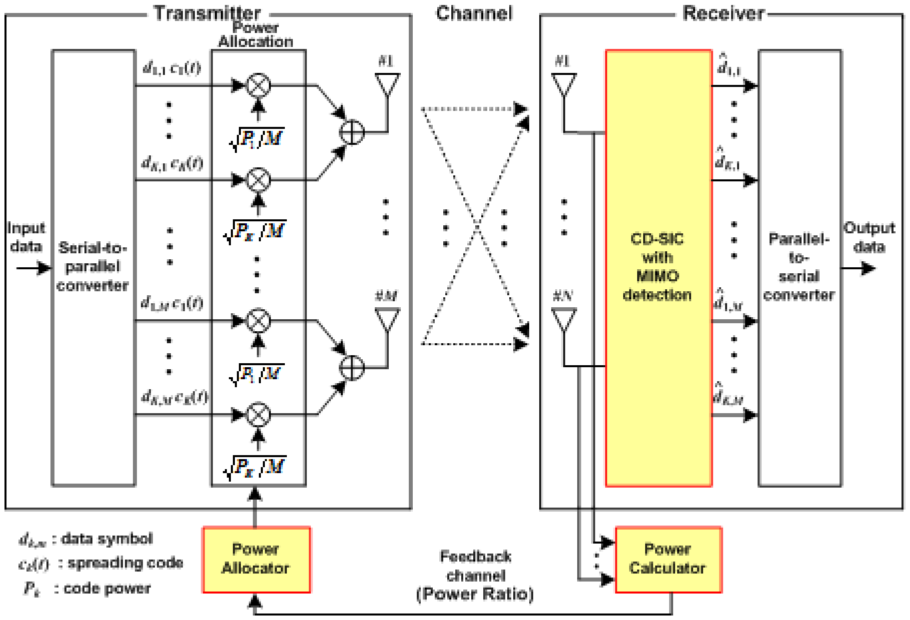 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

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	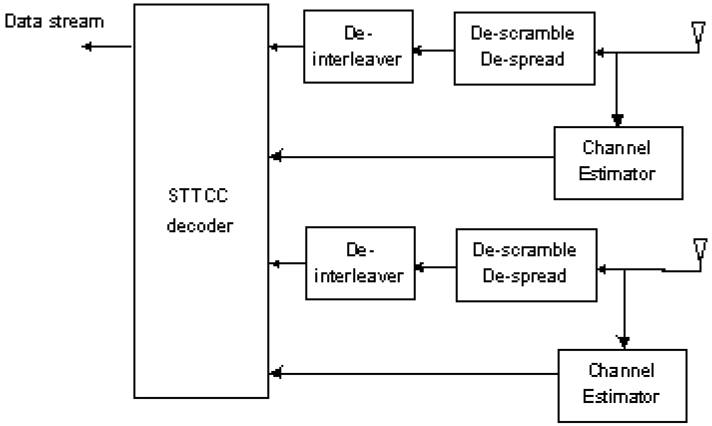 http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_35/Docs/RP-070141.zip	

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	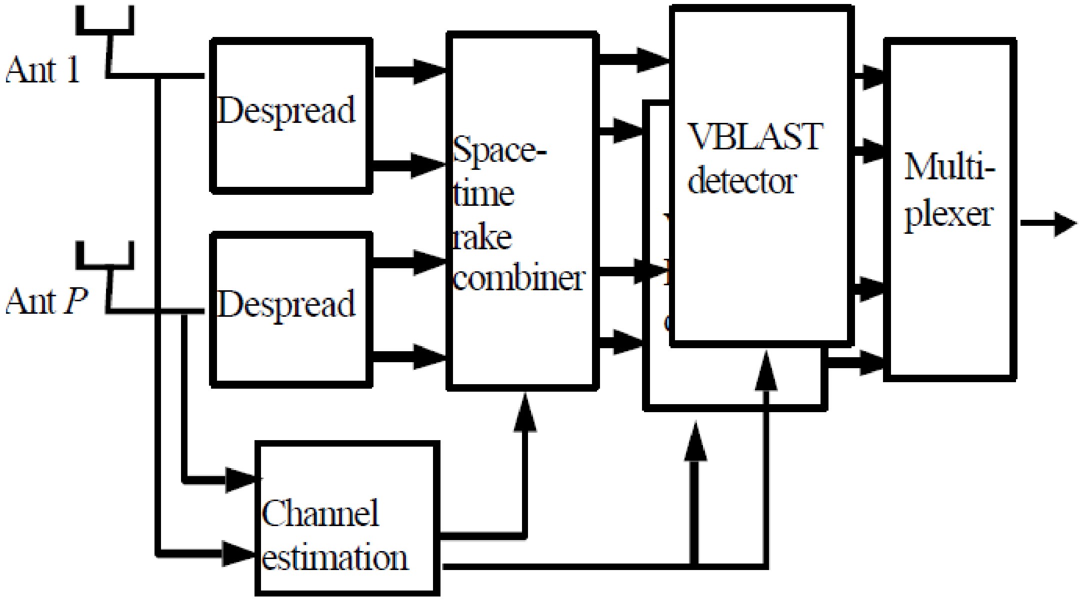 Figure 7. Block diagram of a MIMO receiver http://www.3gpp.org/ftp/Specs/archive/25_series/25.848/25848-400.zip	